PATENT COOPERATION TREAT

	From the INTERNATIONAL BUREAU
PCT	То:
NOTIFICATION OF ELECTION	United States Patent and Trademark Office
(PCT Rule 61.2)	(Box PCT)
	Crystal Plaza 2 Washington, DC 20231
	ÉTATS-UNIS D'AMÉRIQUE
Date of mailing (day/month/year)	7
10 May 1999 (10.05.99)	in its capacity as elected Office
nternational application No.	Applicant's or agent's file reference
PCT/EP98/06749	C 2551 PCT
nternational filing date (day/month/year)	Priority date (day/month/year)
23 October 1998 (23.10.98)	24 October 1997 (24.10.97)
Applicant	
INZÉ, Dirk et al	

effecting later election	17 March 1999			
			<u></u>	
was				
was not expiration of 19 month	hs from the priority d	ate or, where Rule 32	applies, within the time limit unc	er
	was not	was not	was not	

Authorized officer

Telephone No.: (41-22) 338.83.38

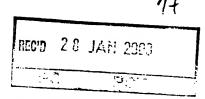
Facsimile No.: (41-22) 740.14.35 Form PCT/IB/331 (July 1992)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

2609560

Jean-Marie McAdams

PCT



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's	or age	nt's file reference		Se	e Notification	on of Transmittal of Internal	tional
C 2551 P	СТ	!	FOR FURTHER AC	IION Pr	reliminary Ex	camination Report (Form P	C1/IPEA/416)
Internationa	l appli	cation No.	International filing date (d.	ay/month/yea		Priority date (day/month/ye	ar)
PCT/EP9	8/067	749	23/10/1998 24/10/1997				
Internationa C12N15/		nt Classification (IPC) or nat	tional classification and IPC				
Applicant CROPDE	SIGI	N NV et al.					
1. This i	nterna		ination report has been paccording to Article 36.	prepared by	this Intern	ational Preliminary Exa	mining Authority
2. This F	REPO	RT consists of a total of	6 sheets, including this	cover sheet	t.		
Ь	een a	mended and are the bas	d by ANNEXES, i.e. she sis for this report and/or o7 of the Administrative	sheets conta	aining recti	ifications made before t	which have his Authority
These	e anne	exes consist of a total of	sheets.				
3. This r	eport	contains indications rela	ating to the following item	ns:			
1	\boxtimes	Basis of the report					
11		Priority					
III	\boxtimes	Non-establishment of o	pinion with regard to no	velty, invent	tive step ar	nd industrial applicability	У
IV	×	Lack of unity of invention					
٧	×	Reasoned statement u	nder Article 35(2) with re ons suporting such state	gard to nov ment	elty, invent	tive step or industrial ap	oplicability;
VI		Certain documents cite	ed				
VII		Certain defects in the in	nternational application				
VIII		Certain observations of	n the international applic	ation			
Date of sub	missio	on of the demand		Date of com	npletion of th	•	
17/03/19	99			ţ		2 6. 01. ⁰⁰	
		g address of the international	al	Authorized o	officer		STATE OF STA
	D-80	pean Patent Office 0298 Munich +49 89 2399 - 0 Tx: 52365	6 epmu d	Grosskop	of, R		
		+49 89 2399 - 4465	F =	Telephone i	No. +49 89 2	2399 8714	ADDRES - ENTER

I. Basis of th report

1.	resp	oonse to an invitation	lrawn on the basis of (substitute sheets which have been furnished to the rec on under Article 14 are referred to in this report as "originally filed" and are no lo not contain amendments.):	eiving Office in at annexed to
	Des	cription, pages:		<i>t</i>
	1-38	3	as originally filed	
	Cla	ims, No.:	•	
	1-2	9	as originally filed	
	Dra	wings, sheets:		
	1/1		as originally filed	
2.	The	amendments have	e resulted in the cancellation of:	
		the description,	pages:	
		the claims,	Nos.:	
		the drawings,	sheets:	
3.		This report has be considered to go	een established as if (some of) the amendments had not been made, since the beyond the disclosure as filed (Rule 70.2(c)):	iey have b en
4.	Add	litional observation	as, if necessary:	
111	. No	n-establishment o	of opinion with regard to novelty, inventive step and industrial applicabil	ity
Th or	to b	estions whether the industrially applic	ne claimed invention appears to be novel, to involve an inventive step (to be recable have not been examined in respect of:	on-obvious),
		the entire internat	tional application.	
	×	claims Nos. 26-29	9.	
be	cau	se:		

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

		the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (<i>specify</i>):
		the description, claims or drawings (indicate particular elements below) or said claims Nos. are so unclear that no meaningful opinion could be formed (specify):
		the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
	Ø	no international search report has been established for the said claims Nos. 26-29.
١V	. Lac	k of unity of invention
1.	In re	esponse to the invitation to restrict or pay additional fees the applicant has:
		restricted the claims.
		paid additional fees.
		paid additional fees under protest.
		neither restricted nor paid additional fees.
2.	×	This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3.	This	s Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
		complied with.
	×	not complied with for the following reasons:
		see separate sheet
4.		nsequently, the following parts of the international application were the subject of international preliminary mination in establishing this report:
	×	all parts.
		the parts relating to claims Nos

- V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- 1. Statement

Novelty (N)

Yes:

Claims 1-25

No:

Claims

Inventive step (IS)

Yes:

Claims

No:

Claims 1-25

Industrial applicability (IA)

Yes:

Claims 1-25

No: Claims

2. Citations and explanations

see separate sheet

Ad item IV:

The present set of claims lacks unity, namely inasfar as it relates to DNA sequences encoding a (novel) cyclin (see Claims 1 and 6 to 29), on the one hand, and general methods for identifying further cyclins (see Claims 2 to 5), on the other hand.

This Authority is not quite sure whether the expression "mitogenic cyclin" should possibly establish a common (inventive) concept. If so, it should be mentioned that said expression is unclear per se and, moreover, not suitable to clearly characterise a possible function of the claimed cyclins and/or to distinguish the novel cyclins from the known cyclins (see also below).

Ad item III and V:

The present application describes a novel cyclin and the corresponding DNA encoding said cyclin.

As far as the claims relate to a precisely defined entity comprising the complete protein (or DNA) or variations thereof which are clearly distinguishable from the known cyclins, novelty and inventive activity could be acknowledged.

Unfortunately, none of the claims is restricted to accordingly defined products or methods using said products.

Since novelty and inventive activity is dependent from the novelty and inventive activity of the independent claims, the objections will be limited to objections which apply for said independent claims (or claims which although referring to an independent claim are not true dependent claims).

Thus in claim 1 the only acceptable characterisation can be found under (a) and (b).

The definition under (c) has no limitation with respect to the length of the claimed fragment and, thus, comprises small fragments which are common with other cyclins (see Fig. 1 of the application) or even with totally unrelated proteins. The definition under (c) could at best be accepted if combined either with a length which is comparable to the complete DNA or if combined with a clearly defined function.

With regard to both (c) and (d), it must be mentioned that a reference to "a

functional fragment" (which function, if not even the "basic" function is defined? see also above) is unclear and the reference to "an immunologically active fragment" is not suitable to distinguish the fragments from fragments of other cyclins which are identical over long parts of their sequence (see again Fig. 1).

The same, in principle, applies for items (e) and especially for (f) which does not even seem to have the "limitations" of the introductory part. The same objections apply also for the claims directed to the cyclin itself (see Claim 11).

For the reasons indicated above, also the antibodies claimed are not distinguishable from antibodies recognising other cyclins (again the expression "specifically recognizing" cannot make a meaningful contribution to such a distinction).

Product claim 4 (in addition to the unity objections) does not have any meaningful feature which is suitable to distinguish the entities from known cyclins.

With regard to Claim 5 all objections raised above apply: the scope of such a claim is totally undefined.

Since Claims 26 and 29 and 27-28 (partially) have not been searched, no meaningful opinion can be given. It appears as if the non-searchability of said claims was based on the same considerations which apply with respect to Claim 5 above.

Finally, Claims 2 and 3 relate to the use of a known cyclin for screening other cyclins. Such an (analogous) method is trivial.

PATENT COOPERATION TREATY

From the INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

EINGEGANGE **VOSSIUS & PARTNER** Vossius & Partner Postfach 86 07 67 NOTIFICATION OF TRANSMITTAL OF D-81634 München 2 7. JAN. 2000 THE INTERNATIONAL PRELIMINARY ALLEMAGNE **EXAMINATION REPORT** Frist (PCT Rule 71.1) bearb.: 2 6. 01. 00 Date of mailing (day/month/year) Applicant's or agent's file reference IMPORTANT NOTIFICATION C 2551 PCT Priority date (day/month/year) International filing date (day/month/year) International application No. 24/10/1997 PCT/EP98/06749 23/10/1998 Applicant CROPDESIGN NV et al.

- 1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
- 2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
- 3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

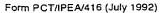
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Authorized officer

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Tel +49 89 2399-8061





(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference		of Transmittal of International Search Report 220) as well as, where applicable, item 5 below.
C 2551 PCT International application No.	International filing date (day/month/year)	(Earliest) Priority Date (day/month/year)
PCT/EP 98/06749	23/10/1998	24/10/1997
CROPDESIGN NV et al.		
according to Article 18. A copy is being to This International Search Report consists	of a total of sheets.	
It is also accompanied by	a copy of each prior art document cited in this	s report.
Basis of the report		
a. With regard to the language, the language in which it was filed, un	international search was carried out on the baless otherwise indicated under this item.	asis of the international application in the
Authority (Rule 23.1(b)).	vas carried out on the basis of a translation of	
was carried out on the basis of th X contained in the internation X filed together with the internation		international application, the international search
	o this Authority in computer readble form.	
the statement that the sui	bsequently furnished written sequence listing is filed has been furnished.	does not go beyond the disclosure in the
the statement that the infe	ormation recorded in computer readable form	is identical to the written sequence listing has been
	nd unsearchable (See Box I).	
3. Unity of invention is lac	king (see Box II).	
4. With regard to the title,		
the text is approved as su	ubmitted by the applicant.	
the text has been establis	shed by this Authority to read as follows:	
the text has been establis	. Job by the applicant. Shed, according to Rule 38.2(b), by this Author a date of mailing of this international search re	rity as it appears in Box III. The applicant may, eport, submit comments to this Authority.
6. The figure of the drawings to be pub	lished with the abstract is Figure No.	
as suggested by the appl	icant.	None of the figures.
because the applicant fai		
because this figure better	characterizes the invention.	

Form PCT/ISA/210 (first sheet) (July 1998)





Box I	Observations where certain claims wer f und uns archable (Continuation f item 1 of first sheet)
This Inte	ernational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. X	Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely: Remark: Although claims 28 is partially directed to a method of treatment of the human/animal body, in so far as it releates to an in-vivo method, the search has been out and based on the alleged effect of the compound/composition.
2. X	Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically: 26, 29 and parts of 27 and 28 See FURTHER INFORMATION sheet PCT/ISA/210
3.	Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
BxII	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This Inte	ernational Searching Authority found multiple inventions in this international application, as follows:
1.	As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.	As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.	As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.	No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark	The additional search fees were accompanied by the applicant's protest. No protest accompanied the payment of additional search fees.



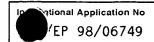
FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Claims Nos.: 26, 29 and parts of 27 and 28

The compound of claims 26 and 29 is insufficiently characterized, consequently the claimed subject matter has not been adequately defined according to article 6 PCT, and has not been searched. Parts of claims 27 and 28 relating to the compound of 26 have likewise not been searched.

The characterization of proteins, DNA sequences and antibodies according to their method of isolation, in at least part of claims 4-25, 27 and 28, is considered insufficient, consequently said claims do not adequately define the subject matter according to article 6 PCT. In the case of these claims, the search for the subject matter defined in such manner, has been restricted to documentation retrievable using the sequence data provided or during a search for the isolation method.





A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C12N15/29 C07K14/415 A01H5/00

C12N15/82 G01N33/53 A01N65/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 6 C12N C07K A01H A01N G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	NAKAMURA, Y.: "Arabidopis thaliana genomic DNA, chromosome 5, P1 clone: MNA5" EMBL ACCESSION NO. ABO11479,10 March 1998, XP002094910 see sequence 55385 - 55650	1
X	SONI R ET AL: "A FAMILY OF CYCLIN D HOMOLOGS FROM PLANTS DIFFERENTIALLY CONTROLLED BY GROWTH REGULATORS AND CONTAINING THE CONSERVED RETINOBLASTOMA PROTEIN INTERACTION MOTIF" PLANT CELL, vol. 7, January 1995, pages 85-103, XP002045510	1,4-6,8, 9,11,12, 27
Υ	see the whole document	13-25,28

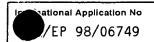
χ Patent family members are listed in annex.
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of mailing of the international search report $16/03/1999$
Authorized officer Maddox, A

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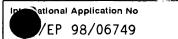


C (Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	JEP 98/06/49
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DAHL M ET AL: "THE D-TYPE ALFALFA CYCLIN GENE CYCMS4 COMPLEMENTS G1 CYCLIN-DEFICIENT YEAST AND IS INDUCED IN THE G1 PHASE OF THE CELL CYCLE" PLANT CELL, vol. 7, November 1995, pages 1847-1857,	1,4-6,8, 9,11,12, 27
Y	XP002045513 see the whole document	13-25,28
Y	DOERNER P ET AL: "CONTROL OF ROOT GROWTH AND DEVELOPMENT BY CYCLIN EXPRESSION" NATURE, vol. 380, 11 April 1996, pages 520-523, XP002045509 see the whole document	13-23,28
Y	WO 92 09685 A (UNIV AUSTRALIAN) 11 June 1992 see the whole document	13-23,28
Υ	WO 97 20842 A (CENTRE NAT RECH SCIENT; MEIJER LAURENT (FR); BISAGNI EMILE (FR); L) 12 June 1997 see page 9, line 8 - line 16 see page 13, line 14 - line 17	24,25
Υ	WO 97 16447 A (MITOTIX INC ;MANSURI MUZAMMIL M (US); MURTHI KRISHNA K (US); PAL K) 9 May 1997 see page 31, line 1 - line 7 see page 60, line 1 - line 15; claim 39	24,25
X	WANG H ET AL: "A PLANT CYCLIN-DEPENDENT KINASE INHIBITOR GENE" NATURE, vol. 386, 3 April 1997, page 451/452 XP002054969 see the whole document	24
X	PLANCHAIS, S., ET AL.: "Roscovitine, a novel cyclin-dependent kinase inhibitor, characterizes restriction point and G2/M transition in tobacco BY-2 cell suspension" PLANT JOURNAL, vol. 12, no. 1, 1997, pages 191-202,	24,25
	XP002094755 see page 195, last paragraph - page 196 /	

2



0-1	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	I Delevent to all the All
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P , X	DE VEYLDER, L., ET AL.: "Identification of proteins interacting with the Arabidopsis Cdc2at protein" J. EXPERIMENTAL BOTANY, vol. 48, no. 317, December 1997, pages 2113-2114, XP002067456 see page 2114, left-hand column	2-9
P,X	DATABASE BIOSIS BIOSCIENCES INFORMATION SERVICE, PHILADELPHIA, PA, US AN 1998:358897, CRUZ-GARCIA, F., ET AL.: "Effect of stimulating maize germination on cell cycle proteins" XP002095095 see abstract & PHYSIOLOGIA PLANTARUM, vol. 102, no. 4, April 1998, pages 573-581,	12
P , X	WANG, H., ET AL.: "ICK1, a cyclin-dependent protein kinase inhibitor from Arabidopsis thaliana interacts with both Cdc2a and CycD3, and its expression is induced by abscisic acid" THE PLANT JOURNAL, vol. 15, no. 4, August 1998, pages 501-510, XP002095094 see page 503, left-hand column, last paragraph - right-hand column see page 508, right-hand column, last paragraph	24,25
Ρ,Χ	WO 98 42851 A (MURRAY JAMES AUGUSTUS HENRY; UNIV CAMBRIDGE TECH (GB)) 1 October 1998 see the whole document	4-9, 11-23, 27,28
P,Y	WO 98 03631 A (SALK INST FOR BIOLOGICAL STUDI) 29 January 1998 see the whole document	13-23,28
A	VEYLDER DE L ET AL: "THE ARABIDOPSIS CKS1 AT PROTEIN BINDS THE CYCLIN-DEPENDENT KINASES CDC2AAT AND CDC2BAT" FEBS LETTERS, vol. 412, no. 3, 4 August 1997, pages 446-452, XP002047992 see the whole document	2-10
Α	WO 93 24514 A (MITOTIX) 9 December 1993 see claims 34-36	12,28



C.(Continua	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DOONAN J: "PLANT GROWTH: ROOTS IN THE CELL CYCLE" CURRENT BIOLOGY, vol. 6, no. 7, 1 July 1996, page 788/789 XP002045511 see the whole document	13-23,28
A	XI Q ET AL: "PLANT CELLS CONTAIN A NOVEL MEMBER OF THE RETINOBLASTOMA FAMILY OF GROWTH REGULATORY PROTEINS" EMBO JOURNAL, vol. 15, no. 18, 1996, pages 4900-4908, XP002045512 see the whole document	13-23,28
A	GRAFI G ET AL: "A MAIZE CDNA ENCODING A MEMBER OF THE RETINOBLASTOMA PROTEIN FAMILY: INVOLVEMENT IN ENDOREDUPLICATION" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, vol. 93, no. 17, 20 August 1996, pages 8962-8967, XP002042542 see the whole document	13-23,28
A	HEMERLY A ET AL: "DOMINANT NEGATIVE MUTANTS OF THE CDC2 KINASE UNCOUPLE CELL DIVISION FROM ITERATIVE PLANT DEVELOPMENT" EMBO JOURNAL, vol. 14, no. 16, 1995, pages 3925-3936, XP002045514 see the whole document	13-23,28
A	WO 93 15213 A (ZENECA LTD) 5 August 1993 see claims 1-4	13-23,28

on on patent family members

EP 98/06749

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WO	9209685	Α	A 11-06-1992	AU AU	657722 B 9046291 A	23-03-1995 25-06-1992
				CA EP	2097286 A 0559729 A	30-05-1992 15-09-1993
				JP US	6504430 T 5750862 A	26-05-1994 12-05-1998
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				EP	0874847 A	04-11-1998
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